

# **CSB - 200**

## **Microwave Barrier**

### **Outdoor Detector 660' x 17' Range**

## **INSTALLATION INSTRUCTIONS**

**&**

## **USER MANUAL**

P/N 7111267 Rev. 1.0 Y.S/A.Y

The CSB-200 is a bi-station microwave detector for long range outdoor applications. It comprises of a transmitter (T) and receiver (R) which, when mounted facing each other, create a perimeter protection with coverage of up to 200m. The dimensions of the detection area vary according to the distance between the two units and the sensitivity calibration.

The CSB-200 Microwave barrier is an advanced detection system utilizing state of the art Microwave technology eliminating false alarms while maintaining high security standards for the detection of human intruders into a protected area.

The CSB-200 is designed to protect large areas and can easily be installed on any type of fence or pole in order to provide a solid barrier protection and block all perimeter activities; this barrier rejects interferences of birds and small animals due to its original method of false alarm elimination.

Several CSB-200 systems can be combined in order to provide a complete perimeter protection with unlimited space or shape.

The CSB-200 is designed for continuous round-the-clock operation and keeps its characteristics within a wide temperature range of -40°C up to +60°C and a relative humidity of up to 98%.

#### Features:

- Detection Range: Up to 200m
- Operating Temperature: -40°F to +140°F
- Power Input: 12 ~ 30 Vdc
- Detect human intruders walking, running or crawling.
- Quick and easy installation on pole, fence or wall.
- No maintenance required.
- High RFI/EMI Immunity.
- Protection against: Power supply failure, direct sunlight, wind up to 30 m/sec, snow and rain, small animals, ground precipitation, snow and grass up to 0.5m, removing the top cover, housing destruction, electromagnetic masking of the receiver.

## **SELECTING MOUNTING LOCATION**

The installation of the CSB-200 requires that the transmitter and the receiver face each other, so that the two antennas may be correctly aligned.

The two units must be positioned in direct line at the edge of the area. Local conditions of the protected zone must be free from obstacles like walls, fences, trees and ditches or other microwave detectors and systems.

In order to ensure suitable operation of the CSB-200, type of ground should be one of the following: Asphalt, Cement, Soil, Clay, Gravel or Grass (mown).

### **Avoid the following locations.**

Avoid installation of CSB-200 on the following type of ground: Thick vegetation, Grass (unmown), Water, Sand and Metal.

The ground must not have movable parts near the sensitive zone, any grassy areas must be frequently mown, there should not be any flowing water, especially longitudinally, ground where structural features may be changed.

The installation site should satisfy the following requirements (see fig. 1):

- The surface of the site should be leveled with a maximum slope angle of 15°.
- No obstacles as bushes or group of trees or walls, within a distance of 2.5m from the centerline between two units.
- Depth of snow on the ground should not be more than 0.5m.
- Height of a grass on the ground should not exceed 0.3m. It is important to mow the grass regularly to avoid its movement interfering with the microwave signal.

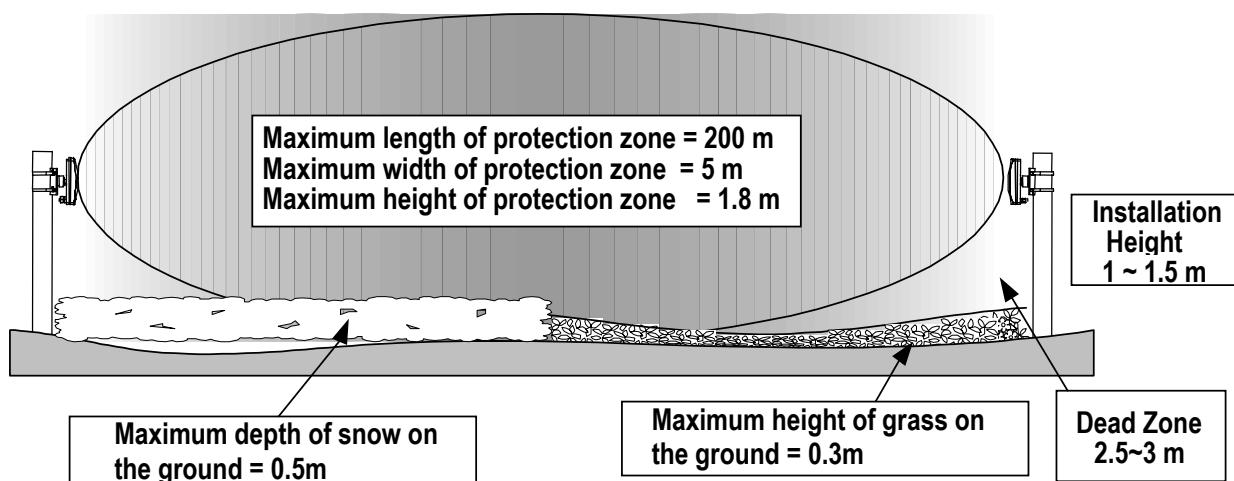


Fig.1. Installation and Protection zone

## **MOUNTING THE DETECTOR**

### **Installation on Pole**

Use metal or cement poles with a diameter of 90 ~ 100mm as the support. It is allowed to install two units on a single support; the two units must be identical (Two transmitters or two receivers).

Installation height of receiver and transmitter units should be in a way that the bottom surface of the plastic housing will be 0.9 ~ 1m above the top of surface (ground and grass).

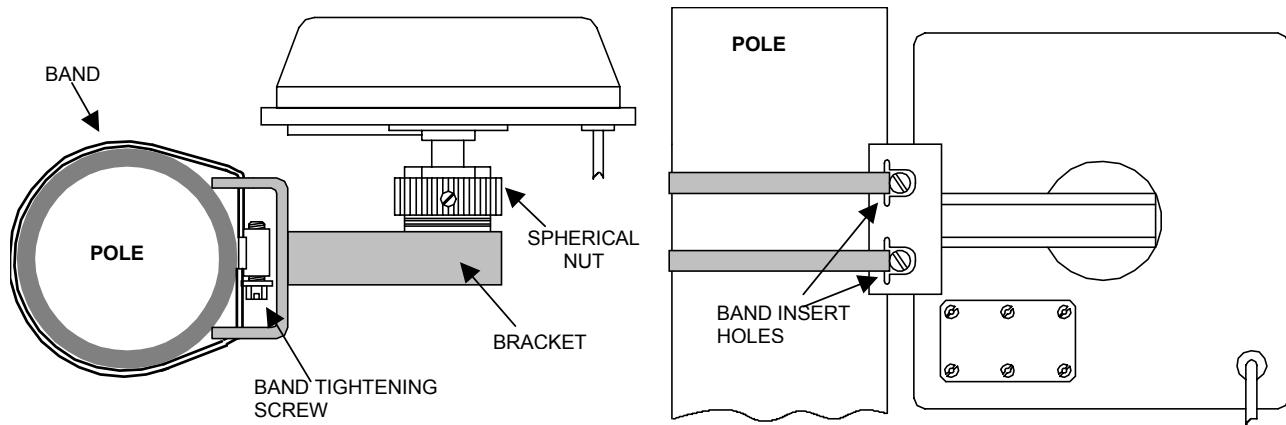


Fig.2. Installation of Transmitter/Receiver on pole with steel wire band

For pole installation, use the steel bands with the bracket; wrap the bands around the pole and through the bracket holes.

Fix the bands with the tightening screws and cut the unused part of bands. (Fig. 2). Connect the plastic housing to the bracket using the spherical nut and hold it with the screw on the nut.

Note: The last step of fastening the spherical nuts should be accomplished after focusing the receiver and transmitter in the optimal position.

### **Top installation.**

The CSB-200 can be also installed on top of a fence or a wall.

Installation height of receiver and transmitter units should be in a way that the bottom surface of the plastic housing will be 0.3m above top of fence or wall.

The support should be mechanically connected to the fence to ensure reliability.

## Cross installation.

In order to avoid “dead zones” under aerials, and to increase the protected area, it is possible to install multiple CSB-200 systems connected together with overlapping. Overlap configurations are performed with the units located at the angles of protected area. The minimum overlap for sufficient coverage must be at least 2.5 ~ 3 m, (depending on the sensitivity set and installation height). It is recommended to install an equal number of CSB-200 systems (T and R) in order to close the perimeter completely. The optimal way is to install transmitters (T) only or receivers (R) only at the point of overlap.

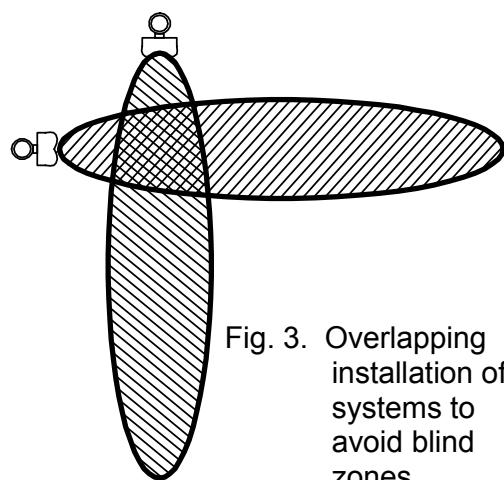


Fig. 3. Overlapping installation of 2 systems to avoid blind zones.

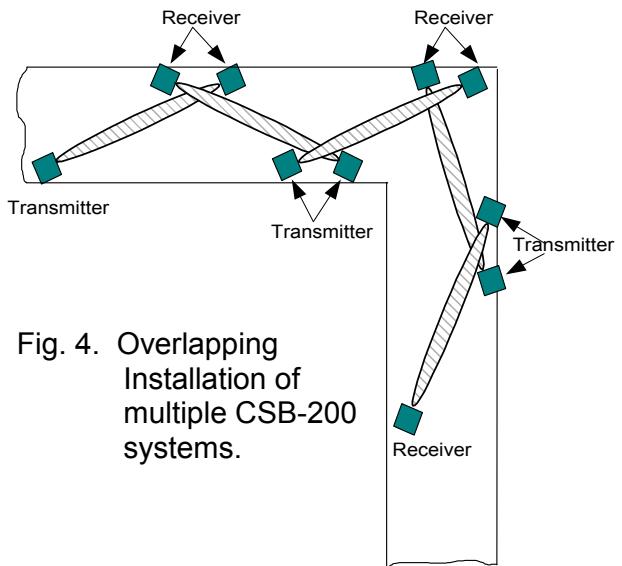


Fig. 4. Overlapping Installation of multiple CSB-200 systems.

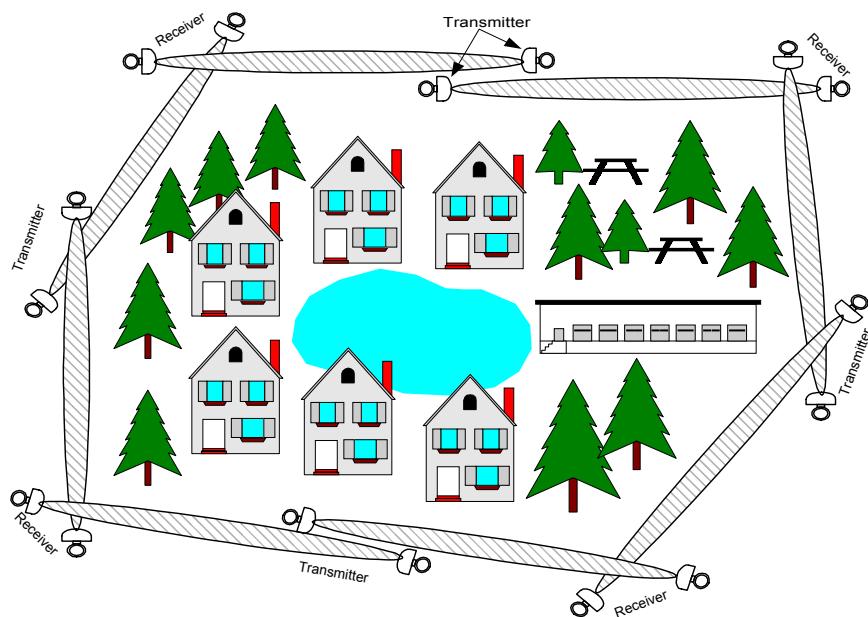
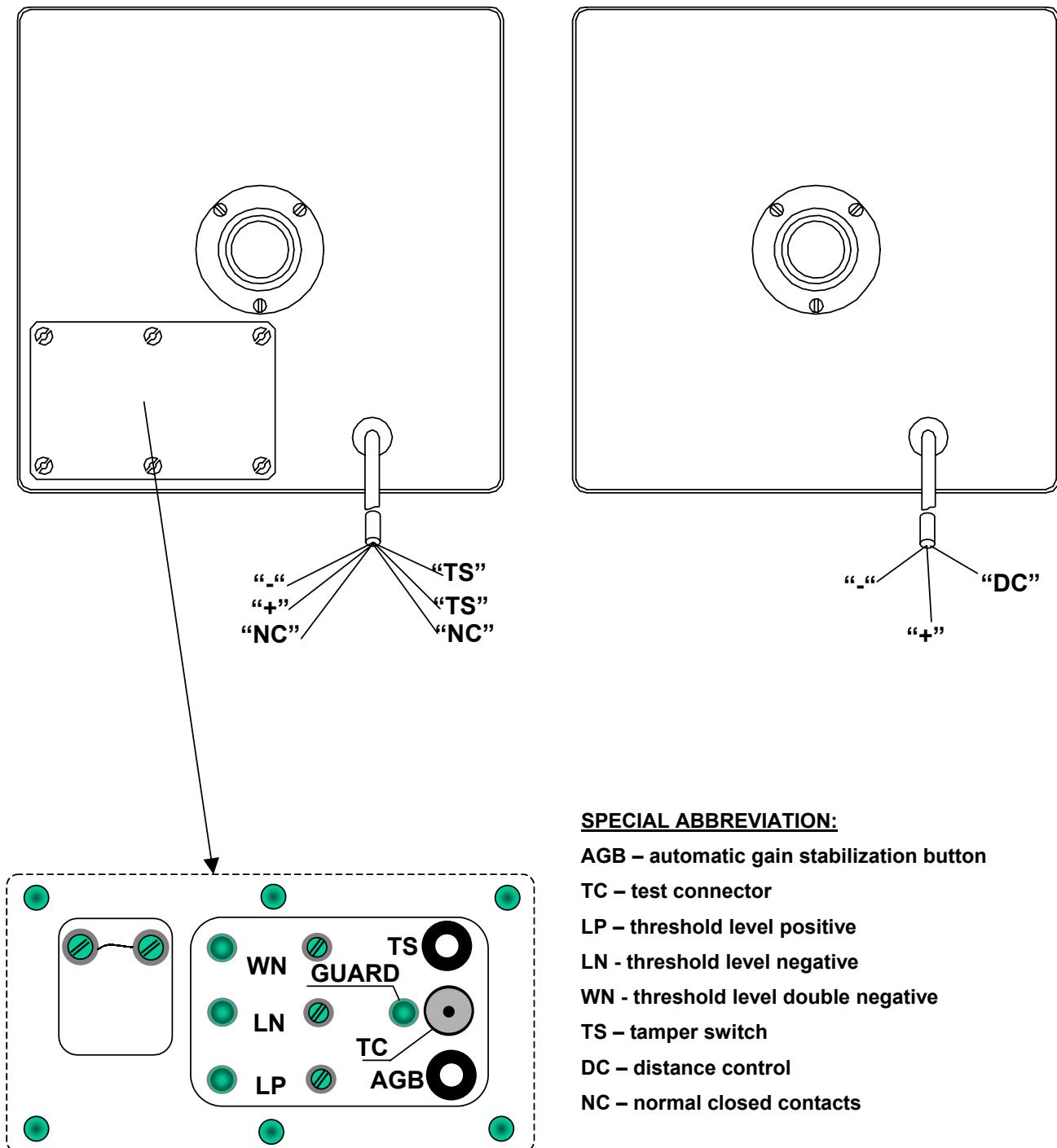


Fig. 5. Overlapping Angle and Range Installation of CSB-200 systems for area protection.

Fig. 6. Wiring connections and Receiver LED indicators and tuning panel.



## CONTROL UNIT WIRING CONNECTIONS

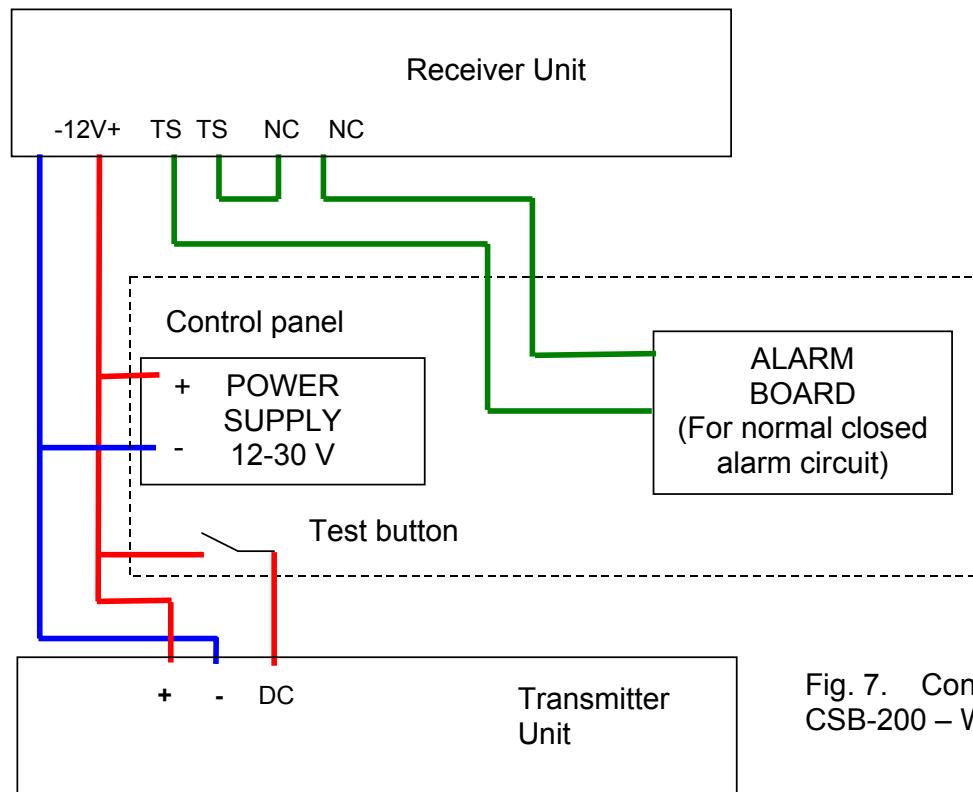


Fig. 7. Control Unit and CSB-200 – Wiring Diagram

### RECEIVER

#### **WIRE Marked “ - ” ( - 12V )**

Connect to the negative Voltage output or ground of the control unit.

#### **WIRE Marked “ + ” ( + 12V )**

Connect to a positive Voltage output of 12 - 30Vdc source (usually from the alarm control unit).

#### **WIRES Marked “ TS ”**

Connect these terminals to a 24-hour normally closed protective zone in the control unit. If the front cover of the detector is opened, an immediate alarm signal will be sent to the control unit.

#### **WIRES Marked “ NC ”**

These are the output relay contacts of the detector. Connect to normally closed zone in the control unit.

### TRANSMITTER

#### **WIRE Marked “ + ” ( + 12V )**

Connect to a positive Voltage output of 12 - 30Vdc source (usually from the alarm control unit).

#### **WIRE Marked “ - ” ( - 12V )**

Connect to the negative Voltage output or ground of the control unit.

#### **WIRE Marked “ DC ”**

Apply 5-30 Volts from alarm station to the terminal marked DC - TEST.

## **POSITIONING AND FOCUSING**

For preliminary set-up, focus the receiver and transmitter as if a virtual direct line connects the receiver and the transmitter.

Make sure that the antenna's radiating surfaces of R and T are parallel (radiating surface is perpendicular to the virtual direct line).

1. Unscrew the 6 screws holding the small cover on receiver backside (fig.6) using the special tool enclosed in the CSB-200 set.
2. Make sure you switched on the power supply and outgoing electric circuit of the sensor correctly as shown in fig. 7.
3. Connect a voltmeter to the output marked "TC" in the tuning panel, using the cable, enclosed in the CSB-200 set.
4. Set the voltmeter to 10VDC measurements range, and switch it ON.
5. Loosen the screw of the receiver hinge.
6. Press the "AGB" button, hold it, and by declining the receiver housing vertically and horizontally, look for maximum voltage measurement.
7. Tighten the screw of the receiver hinge.
8. Loosen the screw of the transmitter hinge.
9. Press the "AGB" button, hold it, and by declining the transmitter housing vertically and horizontally, look for maximum voltage measurement.
10. Tighten the screw of the transmitter.

*Note: The voltage measured must be within the limits of 2.7 V up to 7.5V as a result of the positioning procedure, in order to achieve an extra signal (which is necessary under the changing of environmental conditions).*

11. Switch OFF the voltmeter.

## **TUNING**

Following the positioning process, threshold levels must be calibrated on the receiver back panel.

During threshold calibrations, make sure to perform walk test by crossing the area in different places walking upright and bending down.

| Length of site   | 150 ~ 200m  | 100m     | 75m       | 50m        | 40m      | Less than 30m |
|--|-------------|----------|-----------|------------|----------|---------------|
| Walk test distance from TR, RE in meters, no less, than... | 9.5 ~ 10.5m | 10 ~ 11m | 11~ 11,5m | 13 ~ 13,5m | 16 ~ 17m | In all site   |

Fig. 8 Walk test distance

1. Set the 3 threshold level potentiometers – WN, LN, LP - clockwise to end of route.
2. Observe LED marked WN (large negative level) while assistant is crossing the area in the test distance as described in fig. 8.
3. Turn the WN potentiometer counter-clock-wise slowly, until LED WN flashes.
4. Observe LED marked LP (positive level) while assistant is crossing the area in the test distance as described in fig. 8.
5. Turn the LP potentiometer counter-clock-wise slowly, until LED LP flashes.
6. Observe LED marked LN (small negative level) while assistant is crossing the area in the test distance as described in fig. 8.
7. Turn the LN potentiometer counter-clock-wise slowly, until LED LN flashes.

### **Note:**

*During CSB-200 standby state, “GUARD” LED is active and the detector is ready.*

*During detection, “GUARD” LED fades for 5 ~ 10 sec.*

## **WALK TEST**

Following the tuning process, walk test should be performed.

1. Cross the area in different locations, choosing depressions and elevations.
2. Verify detection by observing the “GUARD” LED fade.
3. If necessary, make fine-tuning of the threshold levels LP and LN.
4. Replace the small cover on receiver backside (fig.6).
5. Screw the 6 holding screws using the special tool enclosed in the CSB-200 set.

### **Note:**

**After tuning the system it is recommended to check functionality for 2-3 days, to verify the installation and tuning.**

## **ROUTINE TEST PROCEDURES**

It is recommended to perform routine inspection of the system with the following tests:

### **Walk Test**

1. After tuning the sensitivity, connect 12Vdc power to the system.
2. Allow 2 minutes warm-up time.
3. Make sure that the protected area is cleared of all people.
4. Cross the middle part of the protected area.
5. An alarm signal should be received in the control unit for 3 Sec.

**NOTE:** *Walk Test procedure should be conducted, at least once a year, to confirm proper operation and coverage of the detector.*

### **Remote Test**

1. Apply 5-30 Volts from control unit to the wire marked DC (Transmit remote control), on the transmitter unit.
2. An alarm signal should be received in the control unit for 3 Sec.

**NOTE:** *During regular operation it is recommended to conduct remote test every day to confirm proper operation of all system.*

## **SPECIFICATIONS**

|  |   |
|--|---|
| Microwave Frequency  | 9.9 GHz   |
| Modulation Frequency   | 2.5 KHz   |
| Maximum Transmitting Power                                   | 10mW (Continues) 25mW (Peak)  |
| Scope (Length of protection zone)                            | Max. 200 m  |
| Lobe Width   | Approx. 5 m   |
| Lobe Height  | Approx. 2m  |
| Power Supply Voltage   | 12...30 V   |
| Current consumption  | Transmitter - 20 mA at 12Vdc<br>Receiver - 20 mA at 12Vdc   |
| Relay contacts values  | N.C 28 Vdc, Maximum current 0.1 A   |
| Alarm Period   | 3 Sec (Max.)  |
| Tamper Switch  | N.C 28 Vdc Maximum current 0.1 A - open when cover is removed   |
| Detection Speed (Target velocity)                            | 0.3 ... 10 m/sec  |
| Remote testing   | Built-in self-test generator simulates actual intrusion signals   |
| Flatness of ground   | Approx. 0.3 m   |
| Maximum height of grass on the ground                        | 0.3 m   |
| Maximum height of snow on the ground                         | 0.5 m   |
| Alarm output - switching over of relay contacts for the time | Minimum 3 Sec   |
| Dimensions of unit (T / R)<br>w/o bracket                    | 260 x 210 x 85mm  |
| Weight (T, R and accessories)                                | 2 Kg  |
| Operating temperature range                                  | -40°C ~ +60°C   |
| Weatherproofing  | <ul style="list-style-type: none"> <li>• All openings with gasket and sealed</li> <li>• Conformal coated circuit board</li> </ul> |

\* Specifications are subject to change without prior notice.

## CROW LIMITED WARRANTY

(CROW) warrants this product to be free from defects in materials and workmanship under normal use and service for a period of one year from the last day of the week and year whose numbers are printed on the printed circuit board inside this product.

CROW's obligation is limited to repairing or replacing this product, at its option, free of charge for materials or labor, if it is proved to be defective in materials or workmanship under normal use and service. CROW shall have no obligation under this Limited Warranty or otherwise if the product is altered or improperly repaired or serviced by anyone other than CROW.

There are no warranties, expressed or implied, of merchantability or fitness for a particular purpose or otherwise, which extend beyond the description on the face hereof. In no case shall CROW be liable to anyone for any consequential or incidental damages for breach of this or any other warranty, expressed or implied, or upon any other basis of liability whatsoever, even if the loss or damage is caused by CROW's own negligence or fault.

CROW does not represent that this product can not be compromised or circumvented; that this product will prevent any person injury or property loss or damage by burglary, robbery, fire or otherwise; or that this product will in all cases provide adequate warning or protection. Purchaser understands that a properly installed and maintained product can only reduce the risk of burglary, robbery or other events occurring without providing an alarm, but it is not insurance or a guarantee that such will not occur or that there will be no personal injury or property loss or damage as a result. Consequently, CROW shall have no liability for any personal injury; property damage or any other loss based on claim that this product failed to give any warning. However, if CROW is held liable, whether directly or indirectly, for any loss or damage arising under this limited warranty or otherwise, regardless of cause or origin, CROW's maximum liability shall not in any case exceed the purchase price of this product, which shall be the complete and exclusive remedy against CROW.



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